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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,213	11/25/2003	Mark Andrew Whittaker Stewart	IS01457MCG	5521

23330 7590 05/31/2007  
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EXAMINER
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LOO, JUVENA W

ART UNIT	PAPER NUMBER
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2609

MAIL DATE	DELIVERY MODE
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05/31/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/721,213

Applicant(s)

STEWART, MARK ANDREW  
WHITTAKER

Examiner

Juvena W. Loo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 1, 5, 7, 11, 14 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This is in response to application filed on November 25, 2003 in which claims 1 to 15 are presented for examination.

#### ***Status of Claims***

Claims 1-15 are pending, of which claims 1, 5, and 11 are in independent form.

#### ***Specification***

1. The abstract of the disclosure is objected to because it is not in a narrative form. Correction is required. See MPEP § 608.01(b).

The specification is objected to because the application numbers for the related cases are not listed.

#### ***Claim Objections***

2. Claims 1, 5, 11, 14, and 15 are objected to because of the following informalities: In particular, claims 1, 5, 11, 14, and 15 are objected to because they include reference characters, DLID, which are not enclosed within parentheses. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. Claims 1-15 contain the trademark/trade name InfiniBand. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material

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or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe InfiniBand switch and, accordingly, the identification/description is indefinite.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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5. Claims 5, 6, 7, 8, and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8, 9, 10, 11, and 12 of copending Application No. 10/722,021. The conflicting claims are not identical since the current application (No. 10/721,213) is directed to an InfiniBand switch while the other one is directed to a connection controller (Application No. 10/722,021). The InfiniBand switch and the connection controller have different functional entities and are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at the time of the invention to use the controller for the purpose of configuring the InfiniBand switch. The motivation is to enhance the controller's ability to program and update the forwarding instructions in the InfiniBand switch.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claims 5, 6, 7, 8, and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9, 10, 11, 12, and 13 of copending Application No. 10/722,022. The conflicting claims are not identical since the current application (No. 10/721,213) is directed to an InfiniBand switch while the other one is directed to a network (Application No. 10/722,022). The InfiniBand switch and the network have different functional entities and are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at the time of the invention to use the InfiniBand switch in the network. The motivation is that the switching will allow the network to direct data to different destinations.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 3-5, 7-11, and 13-15 are rejected under 35 USC 102(e) as being anticipated by Brahmaroutu, US2003/0033427 A1.

As claim 1, Brahmaroutu discloses an InfiniBand switch comprising a forwarding table (Figure 5, 510A- 510N), a plurality of Destination Local Identifier (DLID) and a set of forwarding instructions (Page 7, Section 60, a destination local identifier is assigned to a switch port and the right routing for that switch port is determined when building the forwarding table), each of the plurality of DLIDs corresponds to one of a plurality of routing trees and one of a plurality of end nodes in a network (Page 7, Sections 60-63, all the links that exist between the designated switch port and other switches in the

network are identified and the best route between the switches is selected from the all-switch shortest paths table and entered into the forwarding table).

As claims 3 and 8, Brahmaroutu discloses the structure and calculation of the plurality of routing trees comprises for each spine, a shortest path for the spine node to each of the plurality of end nodes (Page 5, Sections 46-54, the shortest paths between every switch pair are determined by using any All Pair Shortest Paths (APSP) algorithm).

As claims 4 and 9, Brahmaroutu discloses each of the plurality of routing trees comprises at least a portion of a plurality of InfiniBand switches and corresponding plurality of links that form a shortest path from one of the plurality of end nodes to a spine node of the network (Figure 7-8, Page 6-8 Sections 60-64, 67-77, the multipath assignment algorithm is used to establish all the links that exist between the destination switch and other switches in the network.)

As claim 5, Brahmaroutu discloses a method of populating a forwarding table comprises calculating a plurality of routing trees for the InfiniBand switch (Pages 5-6, Sections 46-54, a table contains the shortest path from each switch to every other switch in the network is generated); calculating a plurality of DLIDs and a set of forwarding instructions (Page 7, Section 60, one at a time, a destination local identifier is assigned to a switch port and the right routing for that switch port is determined when

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building the forwarding table), each of the plurality of DLIDs corresponds to one of a plurality of routing trees and one of a plurality of end nodes in a network (Page 7, Sections 60-63, all the links that exist between the designated switch port and other switches in the network are identified and the best route between the switches is selected from the all-switch shortest paths table and entered into the forwarding table), populating a forwarding table of InfiniBand switch with the plurality of DLIDs and the set of forwarding instructions (Page 7, Section 66, once the forwarding tables are built for all switches, the forwarding tables will be downloaded into respective switches in the network).

As claim 7, Brahmaroutu discloses each of the plurality of end nodes comprises a destination, and the destination is identified by a BaseLID (Page 4, Section 31).

As claim 10, Brahmaroutu discloses the shortest path is loop-less (Page 6, Section 55).

As claim 11, Brahmaroutu discloses a method of forwarding a packet within a network, where the packet is created at one of the sources and is addressed to one of the destinations, comprising populating a forwarding table of the InfiniBand switch with a plurality of DLIDs and a set of forwarding instructions (Page 7, Section 66); the packet following a path through the InfiniBand switch from one the plurality of sources to the one of a plurality of destinations, where the switch forwards the packet according to the



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plurality of DLIDs assigned to the packet (Figure 3 and Page 3 Section 28, an example of a packet which includes a header, a payload, and any error checking information; the header contains a destination local identifier associated with a destination port and data path in the network as well as a source local identifier for the source node used for routing by the switches; Figure 4 and Page 4, Section 34, an example of different routes a packet can travel across in a network).

As claim 13, Brahmaroutu discloses the network operates as a strictly non-interfering network (Page 2, Section 21, separate channels are used for different functions. In other words, a channel may be used for transporting send request and reply messages while another channel may be employed to move data between two nodes through switches so various sources do not attempt to use the same network resources at the same time).

As claim 14, Brahmaroutu discloses the packet following the path comprises looking up the one of the plurality of DLIDs assigned to the packet in the forwarding table at the InfiniBand switch (Figure 3 and Page 3 Section 28, a packet contains a destination local identifier (DLID) that can be as an index to the forwarding table at the switch).

As claim 15, Brahmaroutu discloses the packet following the path comprises the InfiniBand switch forwarding the packet in accordance with the one of the plurality of

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DLIDs assigned to the packet and the set of forwarding instructions as found in the forwarding table of the InfiniBand switch (Page 2 Section 19).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 6, and 12 are rejected under 35 USC 103(a) as being unpatentable over Brahmaroutu (US 2003/0033427 A1) in view of Yang et al. (US Patent 5,940,389).

Regarding claims 2, 6, and 12, Brahmaroutu discloses a mechanism to generate forwarding tables for InfiniBand switches (Page 1, Sections 5 and 6). However, Brahmaroutu fails to teach that the switch fabric is a CLOS network. In the same field of endeavor, Yang et al. discloses a Benes Network, which is a special case of a CLOS network, can be used as a switch fabric (Page 4 lines 1-5) and that each node in the network has an entry, which is indexed by an identifier and contains information regarding how to transmit received cells to the next node, in the routing table. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to configure the method and system of Brahmaroutu, as a CLOS network. The motivation would have been in reducing latency and minimizing single point failures.

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### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juvena W. Loo whose telephone number is (571) 270-1974. The examiner can normally be reached on Mon.-Thurs : 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Coby can be reached on (571) 272-4017. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juvena W Loo  
Examiner  
Art Unit 2600

  
**FRANTZ COBY**  
**PRIMARY EXAMINER**